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note for the liberality of the world. How it was received in Chicago you know. With us, the speaking went on from the platform ; and at the end of the morning we elected the list of officers who had been nominated two or three hours before. With his usual promptness, he had taken the whole responsibility before he was so much as chosen to the position in which he was formally acting.

Such promptness as this — his constant readiness to do a large thing rather than a small one — might, in a man of less balance or force, have become rashness. But of him it may certainly be said, that he acquired fortune without any apparent effort to acquire fortune ; he managed a host of trusts without any appearance of worry or anxiety ; he was always at ease and ready for companionship, — for literary, or musical, or other artistic gratification. In the midst of cares, he was never oppressed by them ; and while the least indolent of men, he never appeared exhausted. Such success reveals a well-disciplined mind of extraordinary power, and a soul master of that mind and of the body which served it, loyal to his God, willing to share in his work, and to seek his help to-day.

Mr. Kidder was twice married : first, to Caroline W. Archbald, in December, 1847. Mrs. Kidder died on the 31st of March, 1881, leaving him three sons, Henry Thomas Kidder, Charles Archbald Kidder, and Nathaniel Thayer Kidder.

He married a second time in June, 1883, Elizabeth Huidekoper, of Meadville, Penn., who survives him.

ROBERT TREAT PAINE.

ROBERT TREAT PAINE was born in Boston, October 12, 1803, and died in Brookline, June 3, 1885. He was the grandson of Robert Treat Paine, one of the signers of the Declaration of Independence, and afterwards Attorney-General and Justice of the Supreme Court of Massachusetts, and still better known as the eminent jurist who conducted the prosecution of Captain Preston and his men at their trial for committing the "Boston Massacre." The grandfather was a staunch Federalist, as was also the father, who bore the same name, and was esteemed in his day as a writer and poet. Mr. Paine, our associate, early displayed an interest in astronomy, and distinctly recollected being shown the comet of 1811. He never would admit that any later comet would compare with this, especially as regards the length of its tail, which extended from one side of the heavens to the other. This, like other astronomical objects, had in his mind a vivid

personality, to which he often referred in his conversation and letters. After graduating at Harvard College in 1822, Mr. Paine studied law, was admitted to the bar, and attained some prominence as a lawyer. He showed no desire for political office, although actively interested in politics and current affairs. He was a member of the Boston Common Council in 1828, 1833, and 1834.

While adopting the law as a profession, the great interest of his life was in the direction of astronomy and meteorology. Until his death this was his absorbing study, pursued with the greatest enthusiasm and occupying a large part of his thoughts and conversation. Without under-estimating the value of theoretical astronomy, Mr. Paine's special interest was in the practical side of this science. Soon after graduating at Cambridge he began a meteorological record, which he maintained with great regularity during the remainder of his life. The results for many years were communicated to the public through the columns of the *Boston Daily Traveller*. This record was maintained continuously for fifty years at one station, his house in Boston.

In 1875 Mr. Paine moved to Brookline, where he continued his observations until his death. The total record of nearly sixty years has rarely been equalled by a meteorological observer. Unfortunately, these valuable papers have all disappeared since his death. Mr. Paine's astronomical observations were made with portable instruments. With the sextant he attained extraordinary skill. When a survey of the State of Massachusetts was undertaken, in 1840, Mr. Paine was appointed chief engineer. He soon resigned the position, however, which was afterwards filled by Mr. Borden. All the astronomical work of the survey was done by Mr. Paine. He determined the latitude and longitude of twenty-seven places in the State with his sextant, and the results when compared with the triangulation of Mr. Borden showed a close agreement. The best evidence of the excellence of this work is, that it is still the most accurate determination of a large part of these stations. It is in fact employed as the basis of the new map of the State now being constructed by the United States Geological Survey.

Mr. Paine was associated with Jared Sparks and Joseph E. Worcester in the establishment of the *American Almanac*. He furnished the astronomical portion of this work from 1830 to 1842. Mr. Paine's greatest interest was in the motion of the moon, as determined by occultations and eclipses. During his life he computed over two thousand occultations. The first of these was the occultation of Uranus for Cambridge, September 2, 1824. Besides observing as many

of these occultations as he could, he observed three transits of Mercury and one of Venus. When a boy of nineteen, he computed the elements of all the eclipses of the sun visible in the city of Boston between the years 1822 and 1900. Mr. Paine spared no efforts to observe as many total and annular eclipses of the sun as possible. He succeeded in observing no less than nine, a record that has probably never been equalled by any other observer. Some of these observations involved great personal discomfort, or even danger; but no ordinary difficulties could daunt him when an eclipse was to be observed. Only a few months before his death he planned travelling alone to Montana to observe the eclipse of March 16, 1885.

The dates of the five annular and four total eclipses observed by Mr. Paine are as follows:—

1. Annular. Feb. 12, 1831. Lighthouse at Chatham, Conn. In order to reach this point Mr. Paine was obliged to make an inclement passage by sea of seven miles in an open rowboat.

2. Total. Nov. 30, 1834. Beaufort Arsenal, S. C.

3. Annular. Sept. 18, 1838. Capitol at Washington, D. C.

4. Annular. May 26, 1854. Middlebury, Conn.

5. Annular. Oct. 18, 1865. St. Michael's Church, Charleston, S. C.

6. Total. Aug. 7, 1869. Booneborough, Iowa.

7. Annular. Sept. 28, 1875. Brookline, Mass.

8. Total. July 29, 1878. Denver, Col. Mr. Paine describes his condition at this time as "sick and nearly blind."

9. Total. Feb. 15, 1880. Sycamore, Cal. Mr. Paine's indomitable energy is in no way better shown than by his observation of this eclipse. Although seventy-six years of age and comparatively infirm, he crossed the continent alone. On reaching his destination, he was left by the train on a treeless prairie, with no human being in sight or within many miles. The duration of totality was only thirty-seven seconds, and his main object was to determine this with certainty. He did not dare to devote any of this short interval to the examination of the grand physical phenomena visible only during a total eclipse, and therefore gave his attention exclusively to retaining the correct count of seconds by the chronometer. He returned, after his journey of six thousand miles, entirely satisfied, since he had secured his observations, although he can scarcely be said to have seen the eclipse.

Besides these central eclipses, Mr. Paine observed no less than fifteen partial eclipses of the sun from Boston and its vicinity. During sixty years no solar eclipse occurred in Boston which was not looked for by him, and observed, unless he was prevented by the weather.

Mr. Paine was a man of strong opinions, which he did not hesitate to express with the greatest freedom. He was constant to his friends, and never left an unjust criticism unanswered. He bitterly opposed any action in religion, science, or politics which he believed to be dishonest. He retained his strong will and excellent memory unimpaired to the last. His interest in his favorite science never failed him, and he showed his wish permanently to aid it by bequeathing his entire fortune to the Observatory of Harvard College.

CHARLES UPHAM SHEPARD.*

PROFESSOR SHEPARD died, after a short illness, on the 1st of May last, at Charleston, S. C., where for many years he had spent his winters. He was born in Little Compton, R. I., in the summer of 1804, and hence had nearly completed his eighty-second year. But until his last illness he was still young in his ardent devotion to his favorite science, his delight over the rare and beautiful among minerals, whether in his own cabinet or that of another, and his zeal for collecting and discovering new facts and new species; and not less young in his cheerful and kindly nature.

After graduating at Amherst College, in 1824, he became a student of Professor Nuttall's at Cambridge in botany and mineralogy, and soon after engaged at Boston in instruction in these branches. At the same time he commenced his publications on mineral localities and their minerals, in the *American Journal of Science*.

In 1827, Mr. Shepard accepted the position of assistant to Professor Silliman in chemistry, mineralogy, and geology, which he retained, to the great satisfaction of the Professor, for four years. While thus engaged he also continued, during leisure weeks, his field and laboratory work in mineralogy. "A Mineralogical Journey in Northern New England," including a study of the remarkable localities of Acworth, N. H., and Paris, Me., and "The Mineralogy and Geology of Orange County, N. Y., and Sussex County, N. J.," illustrated by a detailed map of the various mineral localities, are the titles of two of the many papers published by him at that time; and they indicate his desire to give others a knowledge of localities, as well as to make known the results of his investigations.

In 1832, Professor Shepard published the first part of a "Treatise on Mineralogy," in which the system of the eminent Austrian miner-

* From the *American Journal of Science*, June, 1886.